

CLAIMS

What is claimed is:

1. A nail comprising:

a proximal portion and a distal portion, said proximal
5 portion and said distal portion defining a longitudinal axis,
wherein said proximal portion comprises a plurality of
segments along said longitudinal axis, each of said plurality
of segments having an opening;
wherein at least one of said plurality of segments is
10 rotatable with respect to said distal portion about said
longitudinal axis.

2. The nail of claim 1, wherein said plurality of
segments comprise a first segment, a second segment, and a
15 third segment.

3. The nail of claim 2, wherein said first segment is
non-rotatably attached to said distal portion of said nail.

20 4. The nail of claim 1, further comprising means for
locking said at least one rotatable segment for preventing
said at least one rotatable segment from rotating with respect
to said distal portion.

5. The nail of claim 4, wherein said means for locking
said at least one rotatable segment comprises a locking ring.

6. The nail of claim 5, wherein said locking ring
5 comprises a threaded interior surface.

7. The nail of claim 5, wherein said locking ring
comprises a tapered interior surface for creating a taper
lock.

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8. The nail of claim 5, wherein said locking ring
comprises one or more tool openings for receiving a tool to
apply a force to the locking ring.

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9. The nail of claim 2, wherein the first segment and
the second segment each comprise a sidewall defining a
chamber.

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10. The nail of claim 9, wherein the second segment and
the third segment each comprise a connector for being received
in said chamber.

11. The nail of claim 10, wherein the connectors each comprise a ledge, and the chambers each comprise a slot for receiving the ledge.

5 12. The nail of claim 10, wherein the sidewalls comprise a plurality of slits for allowing the sidewalls to deflect.

13. The nail of claim 9, wherein the sidewalls comprise a threaded exterior surface.

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14. The nail of claim 9, wherein the sidewalls comprise a tapered exterior surface.

15 15. The nail of claim 10, further comprising a projection on an exterior surface of the connectors, and a groove on an interior surface of the sidewalls to provide an interference fit between the sidewalls and the connectors.

20 16. The nail of claim 5, wherein the locking ring comprises a polygonal shape to facilitate applying a torque to the locking ring.

17. The nail of claim 1, wherein the nail further comprises a notch disposed on a proximal end for receiving a tool.

5 18. The nail of claim 1, wherein at least one of said openings in said plurality of segments is disposed at a non-perpendicular angle with respect to said longitudinal axis.

10 19. The nail of claim 1, wherein the openings each comprise a substantially oval shape to allow a bone screw to be inserted into the openings in a range of angles with respect to the longitudinal axis.

15 20. The nail of claim 1, wherein the nail comprises an insert in at least one of the openings for supporting a bone screw.

20 21. The nail of claim 1, wherein at least one of said plurality of segments comprises a connector having a recess, and wherein a pin is receivable in said recess to prevent said connector from rotating with respect to said pin.

22. The nail of claim 21, wherein said pin comprises a reduced diameter portion and an enlarged diameter portion, and wherein said enlarged diameter portion comprises threads.

5 23. The nail of claim 1, further comprising a first attachment element for preventing said at least one segment from rotating with respect to said distal portion.

10 24. The nail of claim 23, wherein said plurality of segments comprises a first segment having a threaded surface and a second segment having a shoulder, and wherein said first attachment element comprises a head and a threaded shaft such that said threaded shaft is configured to engage with said threaded surface and said head is configured to abut said 15 shoulder to prevent said second segment from rotating with respect to said first segment.

20 25. The nail of claim 1, wherein said distal portion is formed at an angle with respect to said longitudinal axis of up to approximately 10 degrees.

26. An intramedullary nail for treating bone fractures, said intramedullary nail comprising:

a proximal portion and a distal portion, said proximal portion and said distal portion defining a longitudinal axis, wherein said proximal portion comprises at least one segment that is rotatable with respect to said distal portion about 5 said longitudinal axis; and

means for locking said at least one segment for preventing said at least one segment from rotating with respect to said distal portion.

10 27. The intramedullary nail of claim 26, wherein said means for locking said at least one segment comprises a locking ring.

15 28. The intramedullary nail of claim 26, wherein said means for locking said at least one segment comprises an attachment element having a head and a threaded shaft.

29. A method of treating a fractured bone comprising the steps of:

20 (a) aligning a distal portion of a nail for positioning in said fractured bone;

- (b) rotating a segment of a proximal portion of the nail with respect to said distal portion to orient an opening in said segment along an insertion path of a bone screw; and
- (c) locking the segment with respect to the nail to prevent further rotation of the segment.

5 30. The method of claim 29, further comprising step (d) inserting a bone screw through said opening to fix the bone to the nail.